FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

October 15 to 21, 2017 (Week 42)

Overall Summary

- Influenza activity remains at interseasonal levels across the country.
- The percentage of laboratory tests positive for influenza remains higher for this time of year compared to previous seasons. The majority of influenza detections continue to be A(H3N2).
- Influenza-related hospitalizations and regions reporting sporadic and localized activity are in the higher range of expected levels for this time of year.
- For more information on the flu, see our Flu(influenza) web page.

Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

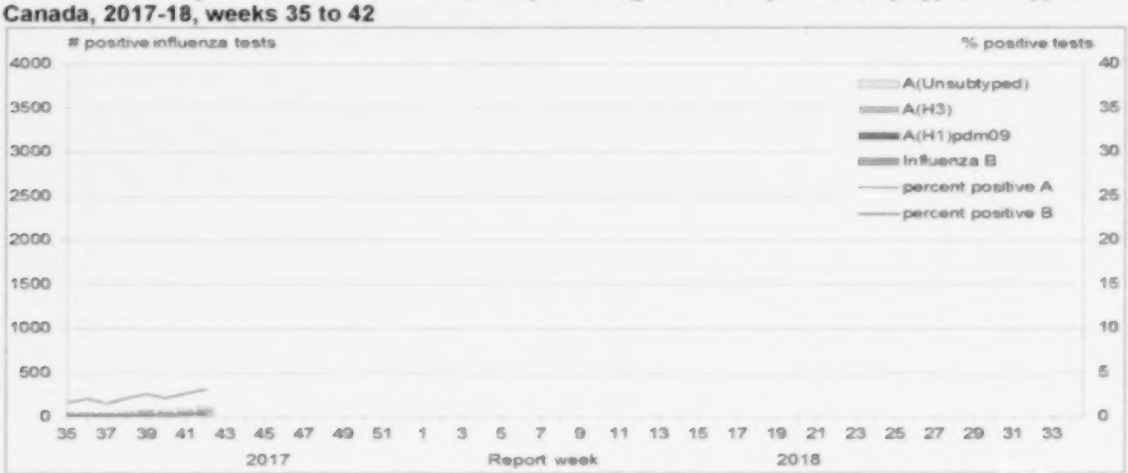
In week 42, three regions in Ontario(1), Alberta(1) and British Columbia(1) reported localized activity, and 17 regions (British Columbia (3), Alberta (4), Ontario (3), Quebec (3), New Brunswick (3) and Prince Edward Island (1)) reported sporadic activity. Consistent with the increased number of influenza detections this season, a greater number of regions are reporting sporadic activity compared to previous seasons.

Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, 2017-18, Week 42

Laboratory-Confirmed Influenza Detections

In week 42, the number of tests positive for influenza remained at interseasonal levels (3.6% in week 42). The percentage of tests positive was low, and increased only slightly from the previous week. The number and percentage of influenza A tests positive remains higher for this time of year than was observed during the previous seven seasons. Influenza B detections remain low. For data on other respiratory virus detections, see the Respiratory Virus Detections in Canada Report.

Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2017-18, weeks 35 to 42



The shaded area indicates weeks where the positivity rate was at least 5% and a minimum of 15 positive tests were observed, signalling the pe[illegible] seasonal influenza activity.

To date this season, 524 laboratory-confirmed influenza detections have been reported, of which 90% have been influenza A. Influenza A(H3N2) has been the most common subtype detected this season, representing more than 90% of subtyped influenza A detections. Detections from BC and AB represent two-thirds (66%) of the cases reported this week, with a further 27% from Ontario and Quebec. For more detailed weekly and cumulative influenza data, see the text descriptions for Figures 2 and 3 or the Respiratory Virus Detections in Canada Report.

Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province/territory, Canada, 2017-18, weeks 35 to 42

To date this season, detailed information on age and type/subtype has been received for 441 laboratory-confirmed influenza cases (Table 1). Approximately 90% of the positive influenza specimens have been influenza A, and among influenza A cases with sub-type information, more than 90% have been A(H3N2). Among influenza cases with reported age and type/subtype information, approximately one half of the cases have been reported in adults 65 years of age and older.

Table 1 – Cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting, Canada, 2017-18, weeks 35 to 42

Age groups (years)	Cumulative (August 27, 2017 to October 21, 2017)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	#	%
0-4	22	6	13	3	6	28	6%
5-19	19	2	11	6	5	24	5%
20-44	68	5	46	17	9	77	17%
45-64	84	9	46	29	12	96	22%
65+	204	2	165	37	12	216	49%
Total	397	24	281	92	44	441	100%

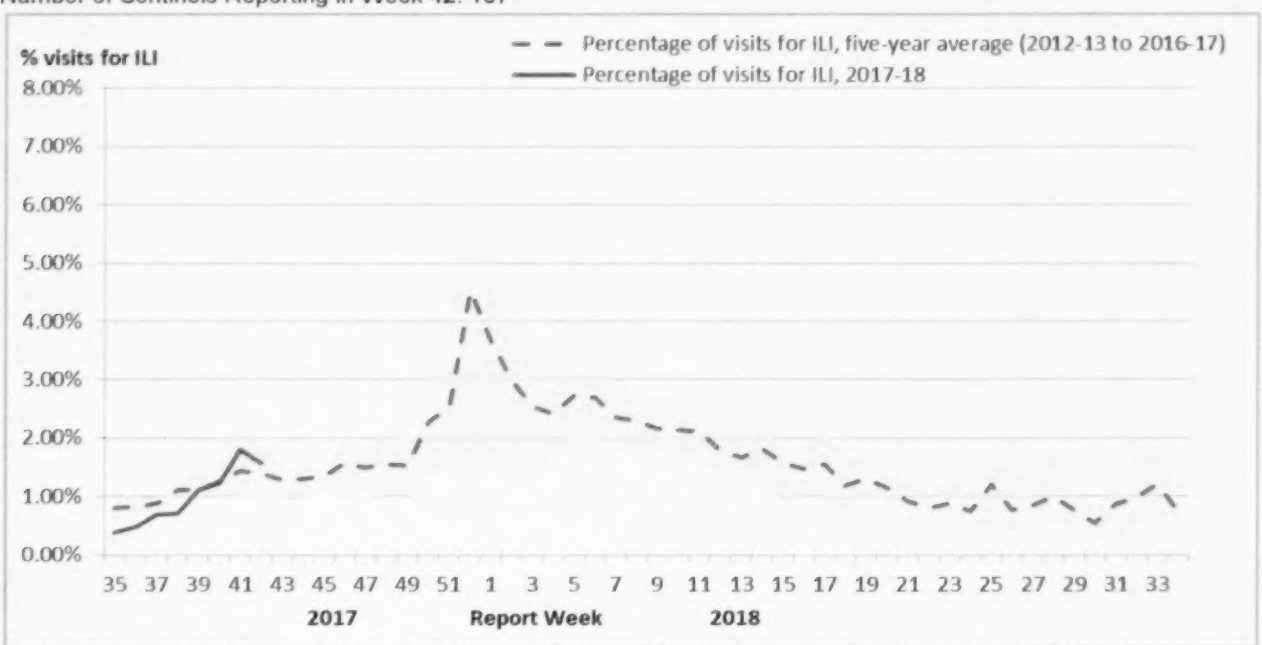
[1]UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available;
x - Supressed to prevent residual disclosure

Syndromic / Influenza-like Illness Surveillance

Healthcare Practitioners Sentinel Syndromic Surveillance

In week 42, 1.6% of visits to healthcare professionals were due to influenza-like illness, down slightly from the previous week and comparable to the 5-year average.

Figure 4 – Percentage of visits for ILI reported by sentinels by report week, Canada, 2017-18, weeks 35 to 42
Number of Sentinels Reporting in Week 42: 107



The shaded area represents the maximum and minimum percentage of visits for ILI reported by week from seasons 2012-13 to 2016-17

Participatory Syndromic Surveillance

FluWatchers is a participatory ILI surveillance system that relies on weekly voluntary submissions of syndromic information from the Canadians across Canada.

In week 42, 1287 participants reported to FluWatchers, of which 2% reported symptoms of cough and fever in the preceding week and 19% of these consulted a healthcare professional. Among participants who reported cough and fever, 58% reported days missed from work or school, resulting in a combined total of 32 missed days.

Table 2 – Summary of influenza-like illness symptoms reported by participating Canadians, Canada, 2017-18, week 42

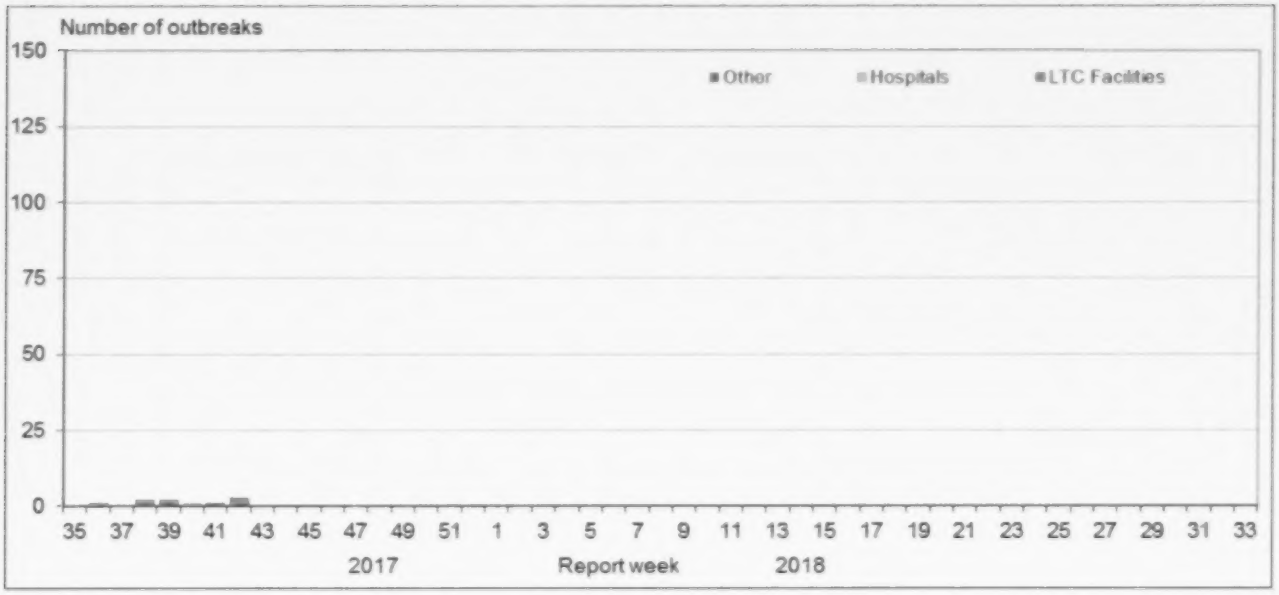
Number of Participants Reporting	Percentage participants reporting Cough and Fever	Percentage of participants with cough and fever who consulted a healthcare professional	Percentage of participants with cough and fever who reported missed days from work or school	Number of missed days from work or school
1287	2%	19%	58%	32

Influenza Outbreak Surveillance

In week 42, three new laboratory-confirmed influenza outbreaks were reported, two in LTC facilities and one in an other setting. Two of the outbreaks were A(H3N2) and one was an influenza B outbreak.

To date this season, 12 influenza/ILI outbreaks have been reported, half of which occurred in LTC facilities.

Figure 5 – Number of new outbreaks of laboratory-confirmed influenza by report week, Canada, 2017-18, weeks 35 to 42



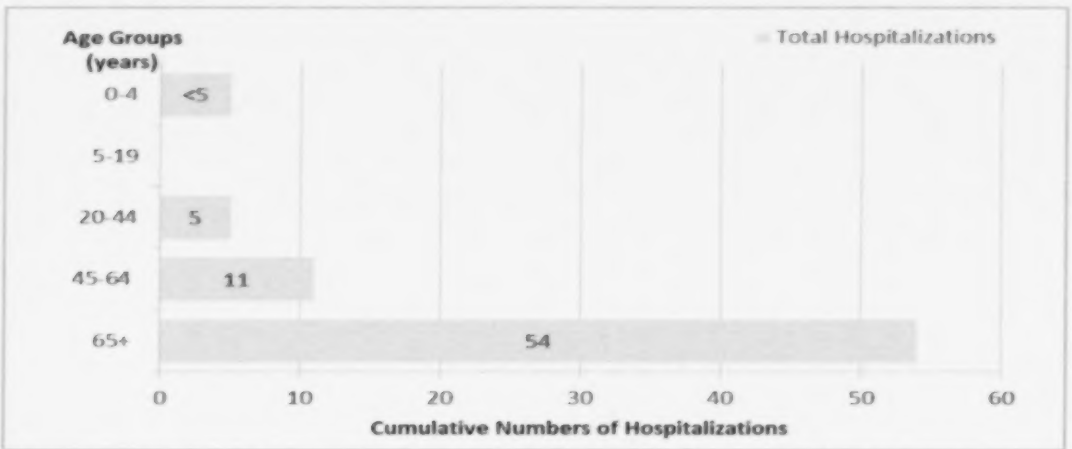
Severe Outcomes Influenza Surveillance

Provincial/Territorial Influenza Hospitalizations and Deaths

In week 42, 18 influenza-associated hospitalizations were reported by participating provinces and territories[1].

To date this season, 74 influenza-associated hospitalizations have been reported, 97% of which were associated with influenza A, and 54 cases (73%) were in adults 65 years of age or older. The number of cases is considerably elevated relative to this period last year. Fewer than 5 ICU admissions and deaths have been reported.

Figure 6 - Cumulative numbers of hospitalizations by age-group reported by participating provinces and territories*, 2017-18 weeks 35-42



[1]Influenza-associated hospitalizations are reported by NL, PE, NS, NB, MB, AB, YT and NT. Only hospitalizations that require intensive medical care are reported by SK.

Pediatric Influenza Hospitalizations and Deaths

To date this season, eight laboratory-confirmed influenza-associated pediatric (≤16 years of age) hospitalizations have been reported by the Immunization Monitoring Program Active (IMPACT) network, all of which were associated with influenza A.

Figure 7 - Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza by type and age-group reported by the IMPACT network, Canada, 2017-18 weeks 35-42

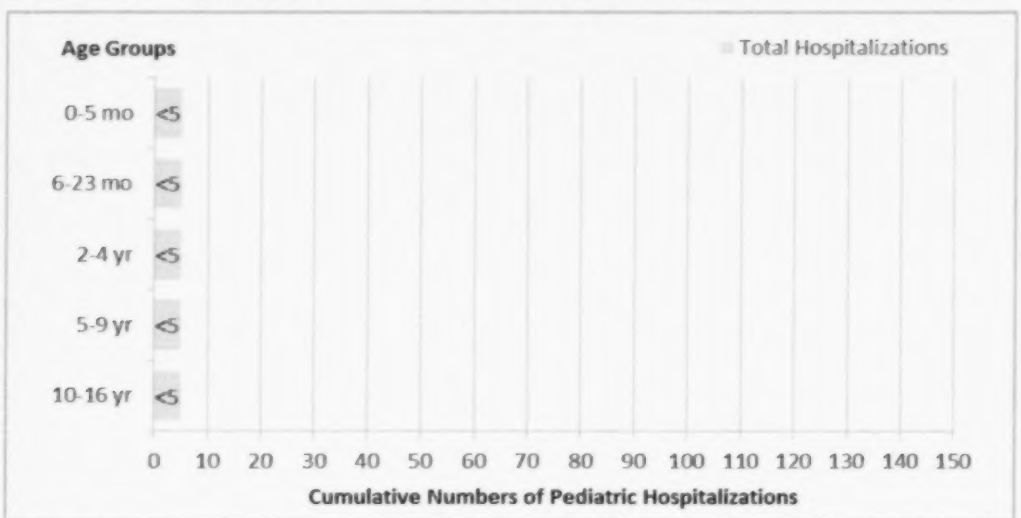


Figure 8 – Number of pediatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, by week, Canada, 2017-18 weeks 35-42

Influenza Strain Characterizations

During the 2017-18 influenza season, the National Microbiology Laboratory (NML) has characterized 46 influenza viruses [34 A(H3N2), 5 A(H1N1)pdm09 and 6 B viruses] that were received from Canadian laboratories.

Antigenic Characterization

Among influenza viruses characterized by hemagglutination inhibition assay during the 2017-18 season, all viruses were antigenically similar to the cell-culture propagated reference strains recommended by WHO.

Table 3 – Influenza antigenic strain characterizations, Canada, 2017-18 weeks 35-42

Strain Characterization Results	Count	Description
Influenza A (H3N2)		
A/Hong Kong/4801/2014-like	5	Viruses antigenically similar to A/Hong Kong/4801/2014, the A(H3N2) component of the 2017-18 Northern Hemisphere's trivalent and quadrivalent vaccine.
Influenza A (H1N1)		
A/Michigan/45/2015-like	5	Viruses antigenically similar to A/Michigan/45/2015, the A(H1N1) component of the 2017-18 Northern Hemisphere's trivalent and quadrivalent influenza vaccine.
Influenza B		
B/Brisbane/60/2008-like (Victoria lineage)	1	Viruses antigenically similar to B/Brisbane/60/2008, the influenza B component of the 2017-18 Northern Hemisphere's **trivalent** and **quadrivalent** influenza vaccine.
B/Phuket/3073/2013-like (Yamagata lineage)	5	Viruses antigenically similar to B/Phuket/3073/2013, the additional influenza B component of the 2017-18 Northern Hemisphere **quadrivalent** influenza vaccine.

Genetic Characterization of A(H3N2) viruses

During the 2017-18 season, 29 A(H3N2) viruses did not grow to sufficient titers for antigenic characterization by HI assay. Therefore, genetic characterization was performed to determine to which genetic group they belong. Sequence analysis showed that 20 H3N2 viruses belonged to genetic group 3C.2a and 9 viruses belonged to subclade 3C.2a1. A/Hong Kong/4801/2014-like virus belongs to genetic group 3C.2a and is the influenza A/H3N2 component of the 2017-18 Northern Hemisphere influenza vaccine.

Antiviral Resistance

During the 2017-18 season, the National Microbiology Laboratory (NML) has tested 43 influenza viruses for resistance to oseltamivir and zanamivir, and all viruses were sensitive (Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2017-18 weeks 35-42

Virus type and subtype	Oseltamivir		Zanamivir	
	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	32	0 (0%)	32	0 (0%)
A (H1N1)	5	0 (0%)	5	0 (0%)
B	6	0 (0%)	6	0 (0%)
TOTAL	43	0 (0%)	43	0 (0%)

Note: Since the 2009 pandemic, all circulating influenza A viruses have been resistant to amantadine, and it is therefore not currently recommended for use in the treatment of influenza. During the 2017-18 season, the subset of influenza A viruses that were tested for resistance to amantadine were resistant.

Provincial and International Influenza Reports

- Alberta – Influenza Surveillance Report
- British Columbia – Influenza Surveillance
- Manitoba - Manitoba – Seasonal Influenza Reports
- New Brunswick – Influenza Surveillance Reports
- Newfoundland and Labrador – Surveillance and Disease Reports
- Nova Scotia – Respiratory Watch Report
- Ontario – Respiratory Pathogen Bulletin
- Prince Edward Island – Influenza Summary
- Saskatchewan – Influenza Reports
- Québec – Flash Grippe
- Australia – Influenza Surveillance Report
- European Centre for Disease Prevention and Control – Surveillance reports and disease data on seasonal influenza
- New Zealand – Influenza Weekly Update
- Public Health England – Weekly national flu reports
- Pan-American Health Organization – Influenza Situation Report
- United States Centres for Disease Control and Prevention – Weekly Influenza Surveillance Report
- World Health Organization – Influenza update
- World Health Organization – FluNet

FluWatch Surveillance for the 2017-2018 Season – Notes and Definitions

The FluWatch report is compiled from a number of data sources. Surveillance information contained in this report is a reflection of the surveillance data available to FluWatch at the time of production. Delays in reporting of data may cause data to change retrospectively

Influenza/Influenza-like Illness (ILI) Activity

Influenza/ILI activity levels, as represented on the map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, primary care consultations for ILI and reported outbreaks. ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls, and the determination of an increase is based on the assessment of the provincial/territorial epidemiologist. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

Influenza/ILI Activity Level definitions

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ; (2) lab confirmed influenza detection(s); (3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*; (2) lab confirmed influenza detection(s);(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†;

* More than just sporadic as determined by the provincial/territorial epidemiologist.

†Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist

Laboratory-Confirmed Influenza Detections

Provincial, regional and some hospital laboratories report the weekly number of tests and detections of influenza and other respiratory viruses. Provincial public health laboratories submit demographic information for cases of influenza. This case-level data represents a subset of influenza detections reported through aggregate reporting. Specimens from NT, YT, and NU are sent to reference laboratories in the provinces for testing.

Syndromic/Influenza-like Illness Surveillance

FluWatch maintains a network of primary care practitioners who report the weekly proportion of ILI cases seen in their practice. Independent sentinel networks in BC, AB, and SK compile their data for reporting to FluWatch. Not all sentinel physicians report every week.

Definition of Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5 years of age, gastrointestinal symptoms may also be present. In patients under 5 or 65 years and older, fever may not be prominent.

Influenza Outbreak Surveillance

Outbreaks of influenza or ILI are reported from all provinces and territories, according to the definitions below. However, reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions. All provinces and territories with the exception of NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals.

Outbreak definitions:

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory-confirmed case of influenza. Residential institutions include but are not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory-confirmed case of influenza; i.e. closed communities.

Serious Outcome Influenza Surveillance

Provincial/Territorial Influenza Hospitalizations and Deaths

Influenza-associated hospitalizations and deaths are reported by 8 Provincial and Territorial Ministries of Health (excluding BC, NU, ON and QC). The hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Only hospitalizations that require intensive medical care are reported by SK.

Due to changes in participating provinces and territories, comparisons to previous years should be done with caution.

Pediatric Influenza Hospitalizations and Deaths

The Immunization Monitoring Program Active (IMPACT) network reports the weekly number of hospitalizations with influenza among children admitted to one of the 12 participating paediatric hospitals in 8 provinces. These represent a subset of all influenza-associated pediatric hospitalizations in Canada.

Influenza Strain Characterizations and Antiviral Resistance

Provincial public health laboratories send a subset of influenza virus isolates to the National Microbiology Laboratory for strain characterization and antiviral resistance. These represent a subset of all influenza detections in Canada and the proportion of isolates of each type and subtype is not necessarily representative of circulating viruses.

Antigenic strain characterization data reflect the results of hemagglutination inhibition (HI) testing compared to the reference influenza strains recommended by WHO. Genetic strain characterization data are based on analysis of the sequence of the viral hemagglutinin (HA) gene.

Antiviral resistance testing is conducted by phenotypic and genotypic methods on influenza virus isolates submitted to the National Microbiology Laboratory. All isolates are tested for oseltamivir and zanamivir and a subset are tested for resistance to amantadine.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

This report is available on the Government of Canada Influenza webpage.
Ce rapport est disponible dans les deux langues officielles.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.